DOCUMENT RESUME

ED 281 472 HE 020 376

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TITLE Student Financial Aid and Educational Outcomes: Is There a Difference between Grants and Loans? ASHE 1987 Annual Meeting Paper.
PUB DATE Feb 87
NOTE 31p.; Paper presented at the Annual Meeting of the Association for the Study of Higher Education (San Diego, CA, February 14-17, 1987). Pages 26-31 contain marginally legible type.
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Academic Persistence; Comparative Analysis; Grade Point Average; *Grants; Higher Education; Influences; *Outcomes of Education; *Scholarships; Student Attitudes; *Student Employment; *Student Financial Aid; *Student Loan Programs; Teacher Student Relationship; Work Study Programs
IDENTIFIERS *ASHE Annual Meeting

ABSTRACT

The effects of different types of student financial aid on student outcomes were investigated for the year 1983: types of support looked at included scholarships, working while attending school, grants, and loans. Attention was directed to four outcome measures that reflect in-school behaviors and attitudes that affect student performance: student-faculty integration, student satisfaction, college grade point average (GPA), and progression rate. Multivariate analysis was employed, controlling for student and college characteristics, and student financial situation. The study sample consisted of 3,056 students 23 years old or younger from 30 southern and eastern U.S. colleges. Comparisons for black and white students were also undertaken. Results indicate that different forms of financial support have different effects on the outcomes. Working effects were positive on student-faculty integration and satisfaction, and no negative effects were found for GPA and progression rate. For those who received financial aid, getting a loan decreased the degree of student-faculty integration, but it improved college GPA and the rate of progression through school. Grants had a substantial positive effect on both student-faculty integration and GPA. (SW)

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Student Financial Aid and Educational Outcomes: Is There a Difference Between Grants and Loans?

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Paper prepared for presentation at the Annual Meeting of the Association for the Study of Higher Education, San Diego, February 15, 1987.

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This paper was presented at the Annual Meeting of the Association for the Study of Higher Education held at the San Diego Hilton in San Diego, California, February 14-17, 1987. This paper was reviewed by ASHE and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC collection of ASHE conference papers.

THEORETICAL PERSPECTIVE

Federal need-based student financial aid programs had their relatively modest beginnings in the mid-1960's. As part and parcel of Lyndon Johnson's vision of the Great Society, national student financial aid was to ensure that disadvantaged American youth had equal access to the road to social mobility--education. Removing barriers to opportunity had become a "moral imperative" (Gladieux, 1985). Throughout the 1970's, student financial aid programs underwent tremendous growth. Policy imperatives broadened from simply ensuring access to ensuring what were to become the three cornerstones of student financial aid: access, choice, and persistence (access to higher education, free choice of institution, and "persisting" to degree completion) (Hearn and Wilford, 1985). Target populations broadened to include women, minorities, and even the middle-class (e.g. the Middle Income Student Assistance Act of 1978 [MISAA]). The kinds of higher education funded by student aid broadened to include proprietary institutions. By 1980, with the advent of the Reagan administration, federal expenditures on student financial aid programs were well over $14 billion, compared to $190 million in 1963 (Gillespie and Carlson, 1983). This growth has not, however, been evenly distributed.

In 1974-75, 16.9% of all federal aid was loan aid, 80.3% was grant aid. In 1980-81, Grants were 56.1% of all federal student aid, while loans were 40.1% (Gillespie and Carlson,1983). Under the Reagan administration, student aid programs came under close scrutiny. Government's "moral imperative" to orchestrate equal access, choice, and persistence shifted to a "help students help themselves" stance. The movement toward reliance on loans as a primary form of student aid gathered momentum. By 1984-85, loans had become the primary

vehicle for student aid, making up 51.7% of all federal student aid, while grants were only 44.6% (Gillespie and Carlson, 1984). The increasing volume of loan aid was multi-faceted--more students in more types of institutions were borrowing more money. Certainly the "self-help" ideology was not the only reason for the expanding loan programs. Rising federal deficits led to cuts in many student aid programs--particularly direct-funded grant aid (Gillespie and Carlson, 1984). College costs were rising at a faster pace than family income, leaving students with more unmet need. Loans had become an accepted part of financial aid packages. All in all, "[t]he shift to loans did not occur by design, but was far from accidental and is here to stay" (Marchese, 1985).

The major concern of policy makers has been the amount of money available to students, not the source of that money. Therefore, loan programs, less expensive and easier to justify, have been the vehicle of choice. Until recently, little distinction has been made about the effects of different types of aid on the recipients--all aid has been considered, for all practical purposes, equal. However, concerns are beginning to emerge. Concerns about excessive debt level: debt levels of $8,000-$10,000, not unusual among current college graduates, may be burdensome for many years following graduation. (Marchese, 1985); concerns that student desire to minimize debt may affect the decision to attend college, which college to attend, and what to major in; concerns that the need to manage debt may affect graduate school attendance and the choice of employment (Marchese, 1985). We seem to have come full circle--the only difference is that the source of money may now be affecting decisions instead of the lack of money.

PREVIOUS RESEARCH

Most of the research on financial aid effects has centered around its influence on college attendance and persistence. Hanson (1982) found that financial aid had no significant effect on college attendance for lower income students. His conclusions, however, were challanged from a number of sources (e.g., Breneman, 1982; Heyns, 1984). Fields and LeMay (1973) reported that financial aid--irrespective of type--increased the chance of college enrollment. Astin (1975) found grants and on-campus employment had a positive effect on persistence, and loans a negative effect. Peng and Fetters (1978) found loans and grants (including scholarships) equally unimportant in their influence on persistence, as did a number of others (e.g. see Bergen and Zielke (1979); McCreight and LeMay, 1982). Voorhees (1985) found both grants and loans had a positive effect on student persistence.

The research on financial aid effects on in-college behaviors, attitudes, and performance is quite a bit sparser but just as inconsistent. Peng and Fetters (1978) reported loans had a negative effect on college GPA, while grants and scholarships had a positive effect. Voorhees found both grants and loans had a positive effect on college GPA. Fields and LeMay (1973) found no detrimental effects of moderate amounts of work on college GPA.

This study is an attempt to better understand the effects of the different types of support students have for higher education. The types of support we looked at included scholarships, working while attending school, grants, and loans. We chose four outcome measures--reflecting in-school behaviors and attitudes that affect students performance as well as academic performance itself--that we felt might be affected by financial aid. Those four outcome measures are (1) student-faculty integration, (2) student satisfaction (3) college GPA, and (4)

progression rate. The importance of college GPA is clear. Progression rate (the average number of credit hours per semester) is important in light of the increasing amounts of time students need to complete their undergraduate careers--an increase often attributed to financial reasons (e.g. working more hours, decreasing financial aid support). Student-faculty integration is a powerful predictor of student performance. Pascarella and Terenzini (1978, 1980) found that the actual frequency and quality of student contact with faculty contributed to higher freshman-year grade point averages as well as to students' personal and intellectual development (see also Bean and Kuh, 1984). Finally, student satisfaction is significantly related to persistence (Tinto, 1975; Cross and Astin, 1981) and higher college GPA's (Nettles et al, 1986).

Method

This study examines the effects of the different types of financial aid on the four dependent variables, and it does so in a multivariate context, controlling for students' background characteristics, students' financial situation, and institutional characteristics. Different financial aid variables were substituted into a number of regressions to examine their effect on the outcome measures within that multivariate context. The first set of regressions were run predicting each of the four dependent variables for the whole sample. The amount of grant and loan aid students received was the independent financial aid variable included. A second set of regressions were run predicting each of the four dependent variables for students who received some financial aid. The type of aid received (received a grant or loan, received a grant only or a loan only, received more loan than grant) were the independent financial variables included in these regressions. This same set of regressions were then run predicting each of the

four dependent variables *only* for students who paid for 50% or more of their educational expenses with a grant or loan. In all cases, whether the students worked or received a scholarship were also entered as independent variables.

The same three analyses were then done for black and white subsamples to see if the financial support effects differed by race.

Using this method, the independent effect of receiving aid on each of the outcome measures is examined, by race, for the whole sample, and the effects of the different types of aid are examined for those who received aid and for those who were likely to be the most dependent on financial aid. Progressively restricting the sample to students more dependent on financial aid may allow effects to emerge that are attenuated in the total sample.

Finally, a note of caution. Research on financial aid effects is fraught with pitfalls. Among other problems, researchers are faced with the need to parcel out independent effects from sets of variables that are often highly intercorrelated (e.g. race, SES, ability, type of institution attended, and receiving financial aid) and the diverse reasons underlying students' choice of financial support. The type of financial aid received, for example, may be affected by when the student applied for aid, how many credits have been completed, family income and assets, and other reasons. Without controlling for this, the effects of different types of financial support are potentially ambiguous. For these and other reasons, financial aid research is vulnerable to error. The inconsistent nature of past research on financial aid effects highlights this problem. This is well kept in mind when drawing conclusions from this or any such research.

DATA

This study is based on a 1983 survey of 4,094 students from 30 colleges and universities in the southern and eastern regions of the United States. The 30 universities were equally divided by type and predominant race into the following five categories: (1) large white state universities (flagship); (2)regional white state universities; (3) black state universities; (4) white large private universities; and (5) black private universities. The original sample was stratified by race to contain 50% white students and 50% black students.

The original sample was designed to randomly select 300 students from each campus--50 white and 50 black students from the sophomore, junior, and senior classes for a total sample of 9,000. However, on several campuses there were not enough students in the minority racial group to select the 50 desired from each class. In these cases, all minority students from those classes were selected, and the result was a sample of 7,428 students surveyed. The 4,094 responses represent a 55.1 percent return rate. The analyses in this study are based on a subsample consisting of 3,056 full-time students, 23 years old or younger.

Because the sampling procedure involved selecting equal numbers of black and white students at each institution, a weighting scheme was applied to the data analyses to control oversampling of minority (whites at black institutions and blacks at white institutions) students at each campus. Similarly, equal numbers of students were sampled at all institutions regardless of the size of the institution. Therefore, small institutions were, in effect oversampled, and they

contributed disproportionately to the results. The weighting factor ensured that respondents would contribute to the results according to their actual racial representation at the institution and their institutions actual representation in the total student population. The formula used to weight each student response is as follows:

$$\text{Weight} = \frac{\text{Percent of students at the institution who are of respondent's race}}{\text{Percent of institutional sample who are of respondent's race}} \times \frac{\text{Percent of total student population who attend respondent's institution}}{\text{Percent of total sample who attend respondent's institution}} \times \frac{N}{En}$$

Variables and Their Indicators

Independent variables in the regression equations are of three types: (1) background variables, (2) institutional variables, and (3) financial variables.

Background variables include gender, race, SES, SAT score, high school GPA, and degree aspirations. Race and gender were coded as dummy variables; for race, 1 equals black and 0 equals white; for gender, 1 equals male. SES is a three-item factor score based on occupation and education of the head of household, and

family income. The SAT score is the sum of the students' verval and math SAT score. High school GPA is an eight-category, self-reported variable with "1" representing the highest grade [A] and "9" representing the lowest grade [below C-]. Degree aspirations were measured with the question "what is the highest academic degree you plan to obtain?" Possible responses ranged from "none" [1] to "doctorate or professional" [5].

Institutional variables include the cost of attending the institution, the total enrollment, and the selectivity of the institution. Cost figures, the 1983 tuition and fees for each institution, were taken from 1983-1984 College Cost Book (CEEB, 1984). Institutional selectivity, based on the mean SAT score (math + verbal) of the students, was coded from "1" [SAT average 671-772] to "5" [SAT average 1179 and above]. Total enrollment figures were reported directly by each institution.

Financial variables include whether students received a scholarship (1=yes), whether students worked while in school (1=yes), and whether students received financial aid (1=yes). Financial aid, in this case, is defined as a loan or grant. The amount of aid received is an ordinal variable, the sum of the two categorical variables reporting the percentage of educational expenses met with grants and loans. Possible responses on the two expense variable components ranged from "0 percent" [0] to "75-100%" [4]. Additional financial aid variables include whether students received a grant (1=yes), a loan (1=yes), only a grant (1=yes), only a loan (1=yes), and, for those who received both a loan and grant, whether more loan than grant was received (1=yes). Note that when the sample is restricted to only those who received financial aid, the received grant variable is the mirror image of the loan only variable as is the received loan with the grant only variable (e.g.,

students with a "yes" on received grant will have a "no" on loan only, those with a "yes" on loan only will have a "no" on received grant.) The more loan than grant variable was constructed by subtracting the categorical variable "% of educational expenses paid by loan" from "% of educational expenses paid by grant" (see Appendix 2). Financial need is a three-item factor indicating the difficulty students faced when financing their education (see Appendix 2). All finance variables are self reported.

Dependent variables in this study include four measures of postsecondary "success": student-faculty integration , student satisfaction, college GPA, and college progression rate. Student-faculty integration is a 5-item factor measuring students' relationships and satisfaction with faculty at their institutions. High scores on the Sstudent-faculty integration factor indicate high student-faculty integration. Student satisfaction is a 5-item factor score measuring general satisfaction with various aspects of college life and the university as a whole. High scores on the student satisfaction factor indicate high satisfaction. Appendix 2 describes the components of all factors in detail. College GPA is a categorical variable with "9" representing the highest grade [A], and "9" the lowest [D+]. College progression rate is defined as the average number of credit hours per semester.

RESULTS

Description of the Sample

Table 1 shows descriptive statistics for the total sample and by race. The weighted sample is 85% white, and about half male and half female; the black

subsample is 67% male. Blacks were of lower SES than whites, had lower SAT scores, lower high school GPA's and higher degree aspirations. Blacks attended slightly lower cost schools, much smaller schools, and less selective schools.

The financial variables show blacks with higher educational financial need than whites. Almost 75% of the total sample worked while attending school--a slightly higher percentage of whites than blacks. 25% of the sample received a scholarship and almost 60% received some financial aid (grant or loan). Blacks were much more likely to receive some financial aid--84% of the black sample received aid compared to 53% of the white sample.

A closer look at the specific type of financial aid shows 33% of the sample received a grant, 10% received only a grant. 48% of the sample received a loan, 25% only a loan. Blacks were much more likely to receive a grant or grant only than whites; whites were more likely to receive a loan only. Nearly equal percentages of the black and white subsamples received loans. 40% of the sample received both a loan and grant (nearly twice as many blacks as whites), and for those who did receive both, almost 70% received more loan than grant. However, over 80% of the whites received more loan, compared to only 25% of the blacks. Overall, the financial aid variables show blacks more likely to receive aid, and more likely to rely on grant aid than whites.

The dependent variables show black students have higher student-faculty integration, lower satisfaction, lower college GPA's, and a lower progression rate than whites.

Regression Analysis of the Total Sample

Table 2 shows the results of the regression analysis on the total sample. The ability of the regression equations to predict the outcome measures is uniformly small (R^2 from .09 to .30); however, several interesting findings emerge from the regression analysis. SES remains a significant positive influence on satisfaction and GPA for whites; for blacks, low SES persists in its effect on progress. Selectivity has a strong effect for both blacks and whites on all four outcome measures--negatively influencing student-faculty integration, GPA, and progress and positively influencing satisfaction. Financial need, or the difficulties students encountered in financing their education, had strong negative effects on satisfaction, slight negative effects on student-faculty integration, and no effect on GPA. Receiving a scholarship had a positive influence on student-faculty integration only for whites and a positive effect on GPA and progress for both blacks and whites. Working while attending school had a small positive effect on satisfaction and GPA for whites, no effect on student-faculty integration or progress. Finally, the amount of grant and loan aid received was significant only in its influence on GPA, and then only for whites.

Regression Analysis of Financial Aid Receivers

Table 3 shows the results of the regression analysis on the subsample of financial aid receivers. The effects of the background variables on student-faculty integration and satisfaction in this sample are less influential than for the full sample. The pattern of background effects on GPA and progress remain fairly stable. Institutional selectivity also maintains its strong effects across all four outcome measures. The negative effects of financial need and the positive effects

of receiving a scholarship remain consistent with the analysis of the full sample, but the remaining financial variables show some interesting changes.

For financial aid receivers, working has a significant positive effect on student-faculty integration and satisfaction for whites. The amount of grant and loan aid received, previously significant only for GPA, is now significant for academic integration as well, but only for whites. For blacks the effect of amount of aid on student-faculty integration is negative, though not significant.

The breakdown of financial aid into its grant and loan components shows a negative effect of receiving a loan on academic integration (for whites) and a positive effect on GPA and progress. Correspondingly, receiving only a grant had a positive effect on student-faculty integration, and a negative effect on GPA and progress. Receiving more loan than grant had a significant positive effect on progress for both blacks and whites.

Regression Analysis of High Financial Aid Receivers

Table 4 shows the results of the regression analysis on the subsample of those who paid more than 50% of their educational expenses with a grant or loan. For this subsample the pattern of background effects again changes. SAT scores now have a significant effect on all four of the outcome measures (positive for student-faculty interaction, GPA, and progress, negative for satisfaction). This may be a function of the recent influx of lower ability students into postsecondary education--students who might not be attending college without the added incentive of substantial financial aid (e.g. see Lee, 1986). Institutional selectivity maintains its importance, and high enrollment shows a strong negative

effect on satisfaction. For the first time, financial need diminishes in importance, maintaining its significant negative influence only on satisfaction. The positive influence of working on student-faculty integration and satisfaction is much stronger.

The effects of the financial aid components also changed. Receiving a grant had a strong postive effect on student-faculty integration (for whites) and a moderate positive effect on GPA. Receiving a loan had no significant influence. Receiving only a loan had a strong negative effect on student-faculty integration and a moderate negative effect on GPA. As for the sample of financial aid receivers, receiving more loan than grant had a significant positive effect on progress.

IMPLICATIONS

Different forms of financial support appear to have quite different effects on the outcomes we considered. First, the effects of working are positive, both for student-faculty integration and satisfaction. Working on-campus may increasingly be a forum for students to interact with their professors.[1] The absence of negative effects of working on GPA and progression rate is encouraging, easing fears that heavy workloads are interfering with academic progress. Given the uniformly positive effects of working, college work study is potentially a highly beneficial form of aid.

The effects of receiving a loan were neither uniformly good nor bad. For those who received financial aid, getting a loan decreased the degree of student-faculty integration, yet it improved college GPA and the rate of progress through school--

[1]Over 50% of students in our sample who worked did so on campus.

and the greater the proportion of loan to grant, the greater the progress. Marchese (1985, p.14) states flatly that a loan is not the same as a grant. In his opinion:

> "Instrumental values are fostered by loans because loans force a responsible student to think ahead to the necessity for repayment; the incentive of loans is to position yourself through your coursework, major, and degree for a higher-paying job that more readily permits repayment of the loan. In effect, college becomes less and less something done for its own sake and more and more something done for what comes afterwards. Now that's not entirely an unhealthy impulse; but the greater the instrumental purpose the less likely will the student be to 'dally' with the contemplations of liberal and civic learning or 'sacrifice' to develop general intellectual capacity."

This instrumental effect of loans may be what is reflected here. Loans appear to facilitate getting through school and getting better grades, yet they have a concomitant negative influence on the quality of education--decreasing the students interaction with faculty.

For students who paid more than half their educational expenses with a loan or grant, loans maintained this negative influence only if they were the only source of financial aid students received. Grants, however, had a substantial positive effect on both student-faculty integration and GPA. For this financial aid dependent population, a combination of grant and loan aid may be most effective. Heavy loan subsidy, however; should probably be avoided.

The increasing reliance on federal student loan programs for supporting education shows no signs of abating. Yet research on student indebtedness and this research indicates that there is much to be concerned about. There *is* a difference between grants and loans. In an effort to support students as cost effectively as

possible, federal policy is continuing its shift toward strong support of loans, yet this shift may be having some untoward effects. If the qualitative aspects of students' education are at risk--qualitative aspects such as student-faculty integration--federal policy may have long-term costs as yet unconsidered. Higher education is more than a degree in hand. The ways we aid students in their pursuit of an education (financial and otherwise) should reflect the many and diverse values inherent in American higher education today.

We have described some of the different effects of the sources of financial support students have available to them; we could only speculate on the causes of those differences. More research on the reasons underlying the differential effects of loans and grants is needed. Another avenue of related research needed is the effect these different forms of financial support have on the "non-traditional" student population. The proportions of part-time and older students is increasing in many different types of institutions. Their reasons for attending school, in-school behaviors and attitudes, and use and effects of financial aid may vary widely from those of the "traditional" student. Finally, a note of caution. Students receive grants and loans of varying amounts and for many different reasons. Although this study shows that grants and loans have different impact, until we are clear about who is obtaining the different types of aid and why, the precise meaning of these results will be out of reach.

TABLE 1

Variable Means and Standard Deviations by Race [a] [b]

	Black Students		White Students		Total Sample	
	μ	sd	μ	sd	μ	sd
Background						
Race (Black = 1)					.15	.36
Gender (Male = 1)	.33	.47	.52	.50	.49	.50
SES	-1.18	3.09	1.97	2.56	1.55	2.85
SAT (V+M)	819	140	1080	155	1040	180
High School GPA	3.66	1.60	2.68	1.52	2.83	1.57
Degree Aspirations	4.10	.74	3.87	.76	3.90	.76
Institutional						
Cost	1,753	1,553	1,890	1,992	1,869	1,931
Enrollment	9,272	11,751	27,420	18,018	24,630	18,406
Selectivity	2.13	.96	3.48	.70	3.27	.89
Financial						
Financial Need	3.20	1.24	2.52	1.16	2.62	1.20
Scholarship (1=yes)	.31	.40	.24	.43	.25	.44
Worked (1=yes)	.65	.48	.74	.44	.73	.44
Financial Aid (1=yes)	.84	.37	.53	.50	.58	.49
Amount of Aid	3.08	1.93	1.25	1.50	1.53	1.71
Grant (1=yes)	.76	.43	.25	.43	.33	.47
Loan (1=yes)	.50	.50	.47	.50	.48	.50
Grant Only (1=yes)	.34	.47	.05	.22	.10	.30
Loan Only (1=yes)	.08	.27	.28	.45	.25	.43
Grant + Loan (1=yes)	.42	.49	.20	.40	.23	.42
Loan > Grant (1=Yes)	.25	.43	.81	.39	.68	.47
Loan - Grant	-1.03	1.97	.46	1.17	.23	1.43
Dependent Variables						
Academic Integration	1.04	5.32	-.51	4.72	-.28	4.85
Student Satisfaction	-.21	.92	.38	.79	.29	.84
College GPA	5.56	1.66	4.45	1.98	4.62	1.97
Progression Rate	14.89	3.53	16.35	3.76	16.13	3.77

[a] All descriptive statistics are weighted; see text for a description of the weighting procedure.

[b] See text and Appendix 2 for full descriptions of all variables.

TABLE 2

Effects of Student Background, Financial, and Institutional Characteristics on Academic Integration, Satisfaction, College GPA, and Progression Rate — Full Sample [abc]

	Student-Faculty Integration			Satisfaction			College GPA			Progression Rate		
	Black	White	Total	Black	White	Total	Black	White	Total	Black	White	Total
Background												
Race (Black = 1)			-.08**			-.09**			.17**			.09**
Gender (Male = 1)	.01	-.06**	-.06**	.08	-.06**	-.04*	.03	.08**	.07**	-.06	-.08**	-.08**
SES	.00	-.03	-.03	-.07	.05*	.03*	-.07	-.06**	-.06**	.14*	.02	.03
SAT (V+M)	.07	-.08**	-.06*	.01	-.11**	-.11**	-.08	-.16**	-.18**	.10	.14**	.15**
High School GPA	.03	.02	.02	.04	-.05*	-.05*	.28**	.34**	.34**	.14*	-.14**	-.14**
Degree Aspirations	.05	.09**	.09**	-.04	-.10**	-.10**	-.15**	-.17**	-.16**	.04	.05*	.05*
Institutional												
Cost	.13*	.12**	.14**	.02	.04	.03	-.09	-.08**	-.09**	.05	.15**	.12**
Enrollment	-.07	-.12**	-.09**	.02	.00	.00	.00	.00	-.01	.23**	.34**	.32**
Selectivity	-.32**	-.09*	-.18**	.20*	.20**	.24**	.27**	.17**	.22**	-.30**	-.31**	-.33**
Financial												
Financial Need	-.10	-.09**	-.09**	-.18**	-.23**	-.21**	.01	.03	.03	-.02	-.09**	-.08**
Scholarship(yes=1)	-.02	.12**	.10**	.03	-.01	.00	-.12*	-.10**	-.10**	.06	.07**	.07**
Worked (yes=1)	.03	.03	.03	.00	.10**	.08**	.01	-.04*	-.03	-.02	.03	.02
Amount of Aid	.03	.02	.02	-.08	-.02	-.03	.00	-.07**	-.06**	.08	.01	.02
R2	.14	.09	.10	.11	.12	.16	.19	.29	.30	.08	.12	.12
N	318	2149	2467	318	2149	2467	318	2149	2467	318	2149	2467

[a] All regressions are weighted; see text for a description of the weighting procedure.
[b] All coefficients are standardized beta weights.
[c] * signifies p ≤ .05 ; ** signifies p ≤ .01.

TABLE 3

Effects of Student Background, Financial, and Institutional Characteristics on Academic Integration, Satisfaction, College GPA, and Progression Rate -- Students Who Received Financial Aid [abc]

	Student-Faculty Integration			Satisfaction			College GPA			Progression Rate		
	Black	White	Total	Black	White	Total	Black	White	Total	Black	White	Total
Background												
Race (Black = 1)			-.09**			-.08*			.20**			-.06
Gender (Male = 1)	.02	-.03	-.02	.09	-.06	-.03	.01	.09**	.08**	-.10	-.05	-.06*
SES	.00	.00	.00	-.07	.05	.03	-.10	-.06	-.07**	.15*	.03	.05
SAT (V+M)	.06	.00	.02	-.01	-.07	-.07	-.09	-.18**	-.21**	.08	.16**	.18**
High School GPA	.03	.08*	.07**	-.05	-.06*	-.06*	.31**	.29**	.30**	-.15*	-.13**	-.14**
Degree Aspirations	.07	.06*	.07*	-.03	-.06	-.05	-.14*	-.14**	-.14**	.06	.07*	.07**
Institutional												
Cost	.12	.23**	.21**	.01	-.07	-.06	-.05	-.03	-.05	.02	.03	.01
Enrollment	-.09	-.04	-.05	.02	-.03	-.02	.02	.07	.04	.24**	.31**	.29**
Selectivity	-.28**	-.26**	-.32**	.22*	.21**	.26**	.25*	.13*	.22**	-.36**	-.34**	-.39**
Financial												
Financial Need	-.09	-.09**	-.09**	-.16**	-.21**	-.18**	.02	-.02	-.02	-.03	-.12**	-.10**
Scholarship(yes=1)	-.04	.14**	.10**	.01	-.06	-.04	-.07	-.11**	-.10**	.03	.09**	.08**
Worked (yes=1)	.02	.09**	.08**	.00	.06*	.04	-.01	-.02	-.02	-.01	.04	.03
Amount of Aid	-.07	.11**	.09**	-.08	-.01	-.03	.05	-.07*	-.05	-.05	.04	.02
Grant (yes=1)	-.03	-.06	-.04	-.03	-.07	-.06	-.06	-.00	-.01	.08	-.05	-.03
Loan (1=yes)	.01	-.09**	-.07*	.00	-.01	.00	.01	-.08*	-.04	.12	.12**	.12**
Grant Only (yes=1)	-.01	.09**	.07*	.00	.01	.00	.01	.07*	.04	-.12	-.12**	-.12**
Loan Only (yes=1)	.03	.06	.04	.03	.07	.06	.06	.00	.01	-.08	.05	.03
More Loan	-.01	.01	.00	.00	.04	.03	.01	-.01	.00	.10**	.15**	.16**
R2	.13	.14	.14	.10	.12	.17	.19	.25	.28	.10	.16	.16
N	259	1097	1355	259	1097	1355	259	1097	1355	259	1097	1355

[a] All regressions are weighted; see text for a description of the weighting procedure.
[b] All coefficients are standardized beta weights.
[c] * signifies p ≤ .05 ; ** signifies p ≤ .01.

TABLE 4

Effects of Academic Integration, Satisfaction, College GPA, and Progression Rate on Student Background, Financial, and Institutional Characteristics -- Students Who Paid More Than 50% of Their Educational Expenditures with a Grant or Loan [ab]

	Student-Faculty Integration			Satisfaction			College GPA			Progression Rate		
	Black	White	Total	Black	White	Total	Black	White	Total	Black	White	Total
Background												
Race (Black = 1)			-.10			-.13*			.33**			-.18**
Gender (Male = 1)	.01	-.10	-.06	.11	-.20**	-.07	.01	.13*	.07	-.11	-.26**	-.20**
SES	-.02	-.14*	-.08	-.03	-.03	-.01	-.07	-.15**	-.13*	.16	.03	.07
SAT (V+M)	.06	.21**	.20**	-.01	-.15*	-.14*	-.01	-.18**	-.17**	.05	.28**	.19**
High School GPA	.07	.09	.08	-.04	-.13*	-.09	.31**	.16**	.23**	-.20*	.01	-.07
Degree Aspirations	.06	.03	.02	.07	-.19**	-.15**	-.15*	-.09	-.10*	.09	.01	.05
Institutional												
Cost	.10	.07	.09	.03	-.26**	-.16**	.07	-.02	-.09	.02	.18*	.08
Enrollment	-.10	-.19	-.17*	.02	-.42**	-.33**	.05	.09	-.03	.18	.55**	.42**
Selectivity	-.17	-.29**	-.31**	.24	.32**	.40**	.18	.02	.24**	-.32*	-.58**	-.49**
Financial												
Financial Need	-.14	.01	-.05	-.17*	-.25**	-.19**	.01	-.01	.00	.01	-.08	-.05
Scholarship(yes=1)	-.03	.07	-.03	.05	.04	-.01	-.04	-.27**	-.16**	.01	.07	.06
Worked (yes=1)	.01	.32**	.15**	-.01	.29**	.15**	.00	-.03	-.03	-.03	.05	.00
Amount of Aid	-.01	-.17*	-.10	-.12	.02	-.06	-.01	-.17*	-.07	.01	.07	.06
Grant (yes=1)	-.02	.29	.19**	.00	-.02	.02	-.01	-.12	-.15**	.06	-.11	-.04
Loan (yes=1)	-.05	-.04	.02	-.01	-.04	.01	.03	.03	.01	.12	-.10	.03
Grant Only (yes=1)	.05	.04	-.02	.01	.04	-.01	-.03	-.03	-.01	-.12	.10	-.03
Loan only (yes=1)	.02	-.29	-.19**	.00	.02	-.02	.01	.12	.15**	-.06	.11	.04
More Loan	.02	-.13	-.06	.01	.07	.06	-.02	.05	.09	.13	.17**	.18**
R2	.31	.12	.18	.12	.34	.21	.16	.36	.33	.11	.23	.21
N	174	279	452	174	279	452	174	279	452	174	279	452

[a] All regressions are weighted; see text for a description of the weighting procedure.
[b] All coefficients are standardized beta weights; * signifies p ≤ .05 ; ** signifies p ≤ .01.

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APPENDIX 1

CORRELATION MATRIX

CORRELATION

	RACE	SEX	SES	HSGPA	SAT	DEGREE	SELECTIV	enroll	scholarship	WORK	COST	COLGPA	PROGRESS
RACE	1.000	-.122	-.369	.194	-.489	.119	-.506	-.328	.042	-.079	-.008	.189	-.130
SEX	-.122	1.000	.024	.171	.174	.036	.074	.015	.042	.089	.002	.086	-.076
SES	-.369	.024	1.000	-.084	.354	.068	.348	.154	-.146	-.107	.108	-.127	.088
HSGPA	.194	.171	-.084	1.000	-.422	-.140	-.298	-.147	-.221	-.093	-.116	.451	-.221
SAT	-.489	.174	.354	-.422	1.000	.147	.626	.350	.215	.112	.250	-.341	.211
DEGREE	.119	.036	.068	-.140	.147	1.000	.050	-.056	.085	.016	.207	-.237	.069
SELECTIV	-.506	.074	.348	-.298	.626	.050	1.000	.626	.083	.082	.318	-.139	.110
enroll	-.328	.015	.154	-.147	.350	-.056	.626	1.000	-.005	.100	-.284	-.014	.190
scholarship	.042	.042	-.146	-.221	.215	.085	.083	-.005	1.000	.076	.110	-.205	.109
WORK	-.079	.089	-.107	-.093	.112	.016	.082	.100	.076	1.000	-.043	-.076	.042
COST	-.008	.002	.108	-.116	.250	.207	.318	-.284	.110	-.043	1.000	-.155	-.006
COLGPA	.189	.086	-.127	.451	-.341	-.237	-.139	-.014	-.205	-.076	-.156	1.000	-.262
PROGRESS	-.130	-.076	.088	-.221	.211	.069	.110	.190	.109	.042	-.006	-.262	1.000
student-faculty	-.095	.053	.069	-.044	.117	-.095	.187	.247	-.087	.013	-.116	.153	-.049
satisfaction	.246	.024	-.194	.088	-.122	.128	-.264	-.195	.024	-.039	.018	.034	-.050
RCVGRANT	.365	-.043	-.457	.057	-.198	.043	-.220	-.159	.221	.074	.086	.026	-.087
RCVLOAN	.018	-.009	-.178	-.058	.111	.072	.115	.122	.063	.223	.187	-.077	.067
AMTAID	.360	-.082	-.439	.071	-.198	.053	-.207	-.092	.093	.136	.071	.018	-.034
financial need	.199	-.060	-.399	-.019	-.100	.073	-.135	-.078	.053	.218	.069	.005	-.068
more loan	-.333	.016	.199	-.109	.265	-.022	.264	.215	-.100	.136	.049	-.095	.147
RCVBOTH	.162	-.032	-.323	.001	-.041	.059	-.051	-.062	.188	.134	.122	-.043	-.012

	student-faculty satisfaction		RCVGRANT	RCVLOAN	AMTAID	financial need	more loan	RCVBOTH
RACE	-.095	.246	.365	.018	.360	.199	-.333	.162
SEX	.053	.024	-.043	-.009	-.082	-.060	.016	-.032
SESFAC	.069	-.194	-.457	-.178	-.439	-.399	.199	-.323
HSGPA	-.044	.088	.057	-.058	.071	-.019	-.109	.001
SAT	.117	-.122	-.198	.111	-.198	-.100	.265	-.041
DEGREE	-.095	.128	.043	.072	.053	.073	-.022	.059
SELECTIV	.187	-.264	-.220	.115	-.207	.135	.264	-.051
enroll	.247	-.195	-.159	.122	-.092	-.078	.215	-.062
scholarship	.087	.024	.221	.063	.093	.053	-.100	.188
WORK	.013	-.039	.075	.223	.136	.218	.136	.134
COST	-.116	.018	.086	.187	.071	.069	.049	.122
COLGPA	.153	.034	.026	-.077	.016	.005	-.095	-.043
PROGRESS	-.049	-.050	-.087	.067	-.034	-.068	.147	-.012
student-faculty	.000	.332	-.071	.034	-.055	.016	.072	-.025
satisfaction	.332	1.000	.214	.055	.198	.268	-.103	.158
RCVGRANT	-.071	.214	1.000	.303	.726	.380	-.408	.786
RCVLOAN	.034	.055	.303	1.000	.668	.367	.521	.547
AMTAID	-.058	.198	.726	.668	1.000	.441	.049	.700
financial need	.016	.268	.380	.367	.441	1.000	.066	.360
more loan	.072	-.103	-.408	.521	.049	.066	1.000	-.041
RCVBOTH	-.025	.158	.786	.547	.700	.360	-.041	1.000

APPENDIX 2

Item	Correlation with Factor	Item	Correlation with Factor	Cronbach's Alpha Reliability
	Student Factor	*Student Satisfaction*		
1. Are you satisfied with the student housing at your university? (1 = very satisfied, 5 = very dissatisfied)	-0.43	5. Are you satisfied with the student employment services at your university? (1 = very satisfied, 5 = very dissatisfied)	-0.40	0.74
2. Are you satisfied with your university's academic reputation? (1 = very satisfied, 5 = very dissatisfied)	-0.58	6. Are you satisfied with the student organizations at your university? (1 = very satisfied, 5 = very dissatisfied)	-0.42	
3. Are you satisfied with the quality of classroom instruction at your university? (1 = very satisfied, 5 = very dissatisfied)	-0.42	7. Are you satisfied with the administration at your university? (1 = very satisfied, 5 = very dissatisfied)	-0.49	
4. Are you satisfied with the variety of courses offered at your university? (1 = very satisfied, 5 = very dissatisfied)	-0.58	8. Are you satisfied with the libraries, learning centers, etc., at your university? (1 = very satisfied, 5 = very dissatisfied)	-0.58	
	Student Factor	*Academic Integration*		
1. There is very little contact between professors & students outside the classroom. (1 = strongly agree, 5 = strongly disagree)	0.61	6. It is easy to develop close relationships with faculty members on this campus. (1 = strongly agree, 5 = strongly disagree)	-0.77	0.83
2. Most faculty members here are sensitive to the interests, needs & aspirations of students. (1 = strongly agree, 5 = strongly disagree)	-0.61	7. How often have you socialized informally with a faculty member? (1 = very often, 5 = almost never)	-0.46	
3. At least one faculty member here has had a strong impact on my intellectual development. (1 = strongly agree, 5 = strongly disagree)	-0.45	8. How often have you discussed career plans and ambitions with a faculty member? (1 = very often, 5 = almost never)	-0.48	
4. Faculty members here are good teachers. (1 = strongly agree, 5 = strongly disagree)	-0.48	9. How often have you discussed personal problems and concerns with a faculty member? (1 = very often, 5 = almost never)	-0.46	
5. If a student seems to be doing poorly, this university goes out of its way to help the student stay in school. (1 = strongly agree, 5 = strongly disagree)	-0.52	10. Are you satisfied with the faculty-student relations? (1 = very satisfied, 5 = very dissatisfied)	-0.71	
	Student Factor	Financial Need		
1. How difficult is it to finance your college education? (1=Not difficult 5=Very difficult)	.56	3. How satisfied are you with financial services at your universtty? (1= Very satisfied, 5=Very dissatisfied)	.52	
2. Have you experienced financial difficulties since enrolling in college? (1=yes)	.52			
	Student Factor	*Socioeconomic Status (SES)*		
1. Parents' education	0.71			
2. Parents' income	0.73			0.85
3. Parents' occupation	0.86			

The "more loan than grant" variable was constructed as follows:

% of educational expenses paid by loan - % of educational expenses paid by grant

where each of the educational expense variables is a categorical variable with possible responses ranging from "0" [0%] to "4" [76-100%].